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Scott Kloeck-Jenson Fellowship report
Travel Award (2014)
Lima, Peru

I received a Scott Kloeck-Jenson fellowship to complete an international internship during the summer of 2014. I spent the summer working with the Wildlife Conservation Society (WCS) in their main Peru office in Lima. WCS is an international conservation group that focuses on priority landscapes around the world. Their country offices, like the one where I worked in Lima, serve as the main bases for aiding in conservation issues at a national scale. The Peru office focuses on two priority landscapes: the Madidi-Tambopata landscape in southeastern Peru and western Bolivia, and the Yavari-Samiria landscape in northern Peru. Both of these landscapes are important hotspots of biodiversity in the Amazon rainforest. In addition to these landscapes, the WCS Peru office also funds and supports conservation projects around the country, including in many national protected areas.

My work specifically was with the GIS team, which assists diverse projects within the organization. During my time in Peru, I mainly focused on two projects: a deforestation analysis of the Bahuaja-Sonene National Park and the identification of priority areas for conservation in the region of Puno. Both of these projects focused on the Madidi-Tambopata landscape in southeastern Peru, although the Puno project also reached into the highlands of the Andes.

The deforestation analysis was my principal project, which I mostly completed independently. The Bahuaja-Sonene National Park is located in a highly diverse tropical rainforest area, with a multitude of wildlife. It is especially important for large, keystone species, because it is very extensive (~1 million ha) and can thus support wildlife that need large amounts of habitat, such as jaguars. While the interior of the park is quite remote and therefore well protected, the edge of the park and its buffer zone face exterior threats such as gold mining and agricultural expansion. Of particular concern to park personnel and the regional government is the expansion of coca production on the foothills surrounding the park, which then fuels narcotrafficking of cocaine outside the country. The purpose of the deforestation analysis was to determine the rate of deforestation on the outskirts of the park and in its buffer zone, and to identify potentially problematic areas.

To do the deforestation analysis, I used satellite imagery from the satellite Landsat, which provides images for free at a resolution of 30m by 30m. I first downloaded images for the park from 2011 and 2013, which was my period of analysis, and cut them to the size of my study area. Then, I used trial and error to classify the images into the various land changes (i.e., stable forest, deforested areas, etc.). The approach I used is called supervised classification, which means that I gave the computer training sites, or example of each class, which the computer then used to classify the entire image. This was the most time consuming part of the analysis, as I needed to

tweak the training sites for each iteration to try to improve my results. Finally, I arrived at an acceptable level of accuracy. From there, I brought the result into ArcGIS 10.1 to determine the rate of deforestation within each of the areas. It turns out that the buffer zone had the highest rate of deforestation, even higher than outside of the buffer zone. This could be due to the fact that the agricultural frontier has already moved past the outside areas, and is now moving into the buffer zone. I also identified key “hotspots” of deforestation. One was on the western edge of the park, where a new road has been built and agriculture is expanding rapidly. The other hotspot is in the southern tip of the park. Agricultural expansion is also high in this area. In addition, agriculturalists are building an illegal road inside of the park that could spell trouble for its management. This information will be used by the park guards to try to confront these threats. It will also serve as a baseline of deforestation that will be used in the Management Plan for the park, which will be written later this year. I also wrote an official report for WCS on the work (in Spanish) that is currently being institutionalized.

The other main project that I worked on was an identification of priority areas for conservation in the province of Puno. I worked with a team of two other GIS specialists from WCS, and conservation professionals from ProNaturaleza. Together, we compiled information about the probable ranges for several key species in the ecosystem (e.g., jaguar, scarlet macaw, puma, river otter, etc.). Then, we made a model of the human influence on the landscape, by identifying the presence or absence of roads, cities, mining, etc. throughout the region. The biologists then decided on the relative level of threat of each of these activities on each species, and we developed a ‘landscape’ of habitat quality and threat for each species. By laying these over each other, we identified areas that were ideal for conservation in that they had a low or medium threat level and quality habitat for several species. This information will be used by the regional government as they make a plan to implement several new regional protected areas. I found this work to be extremely rewarding as it was enjoyable to work on the project as a team and get to know my colleagues better.

Overall, I had a great experience working as an intern for WCS Peru over a period of 2 months this summer. I learned a lot about the environment of an environmental NGO and the inter-workings of the GIS team. Not all of it I liked, but I think the experience will help me to find an organization or project that is more suitable to my interests and style. I am also very pleased that I was able to work on such important issues in Peruvian conservation, and I think it will increase my credibility if I continue working on conservation in the Amazon. I also enjoyed very much being immersed in Spanish and Peruvian culture. I was pretty much the only foreigner on the WCS team, which was challenging at times when I felt lonely, but made for a very impactful experience. My room-mate was also a coworker at WCS, and so I barely hung out with anyone who was not Peruvian. Again, that was challenging, but I think it made my experience much more authentic and helped me to delve a lot deeper into Peruvian culture. I hope I can make it back to Lima soon!